

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF OREGON

PAMELA L. BOND, individually and as)
Personal Representative of the Estate of Craig R.)
Bond, Deceased,)

Plaintiff,)

v.)

UNITED STATES OF AMERICA,)

Defendant.)

Civil No. 06-1652-JO

FINDINGS OF FACT AND
CONCLUSIONS OF LAW

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JONES, Judge:

INTRODUCTION

Plaintiff Pamela L. Bond, the widow of Craig R. Bond, deceased, and the personal representative of his estate, brings this Federal Tort Claims Act ("FTCA") action pursuant to 28 U.S.C. §§ 1346(b) and 2674, against the United States of America ("defendant") to recover damages for medical malpractice resulting from the negligent treatment, wrongful acts, and omissions of employees at the Portland Veterans Administration Medical Center ("VAMC"). Complaint (#1) at 2-3. Specifically, plaintiff alleges that defendant was negligent for failing to properly and timely diagnose Bond's cardiac condition; failing to provide him with appropriate specialty surgical intervention; failing to conduct medically necessary testing prior to his discharge; and for improperly discharging him before his dangerous, life-threatening cardiac condition was properly stabilized. See id. at 6. As a result, plaintiff claims that Bond, who was 55 years old, suffered an untimely death from his cardiac condition on September 26, 2005, approximately 48 hours after he was discharged from the VAMC.

Pursuant to the FTCA, plaintiff's medical malpractice claim was tried to the court, without a jury. The applicable substantive law in this FTCA case is that of the State of Oregon, where plaintiff's alleged injuries occurred. See 28 U.S.C. §§ 1346(b)(1) and 2672. In Oregon, wrongful death actions are authorized under O.R.S. § 30.020, and the standard of care is set forth in O.R.S. § 677.095(1), as follows: "A physician . . . licensed to practice medicine . . . by the Board of Medical Examiners for the State of Oregon has the duty to use that degree of care, skill, and diligence that is used by ordinarily careful physicians . . . in the same or similar circumstances in the community of the physician . . . or a similar community."

The four-day trial commenced on February 5, 2008. After carefully considering the large volume of medical literature submitted by both parties before, during, and after trial, as well as hearing the testimony of sixteen expert witnesses regarding the liability and damages issues in this case, the court concludes that the physicians who treated Bond at the VAMC from the time of his emergency room admission on September 22, 2005, to the time of his discharge on September 24, 2005, met the standard of care for physicians in the Portland area.¹ Accordingly, for the reasons set forth below, defendant did not commit medical malpractice.

SUMMARY OF BOND'S MEDICAL HISTORY

The data contained in Bond's 607-page medical record is not subject to dispute; though the interpretation of several key tests and the course of treatment the VAMC doctors chose to address Bond's cardiac condition involve a number of judgment calls, which plaintiff contends

¹At the end of the trial, the court ruled that the parties could submit supplemental literature to address the following question: What percentage of stenosis would call into play a surgical approach? In particular, the court sought literature showing the percentage breakdowns of stenosis correlated with life expectancy (mortality). The material submitted by plaintiff is listed in Appendix A, and the defendant's submissions are listed in Appendix B.

were not appropriate. It is undisputed that Bond, who was a combat veteran from the Vietnam conflict, was permanently disabled from post-traumatic stress disorder ("PTSD") and hearing loss. There is evidence in the record that Bond smoked a pack a day of unfiltered cigarettes for approximately 30 years and had not yet managed to quit as of the date of his discharge from the hospital. See Exhibit P1 at 262; and see id. at 170, 174 (discussing cessation counseling at discharge). Bond also struggled with alcohol abuse; a notation in his medical records indicates that he reported regularly consuming a 12-pack of beer per day for 30 years. See id. However, his widow testified that she believed his alcohol use declined significantly the past few years. Bond, who was six feet two inches tall and weighed 240 pounds, was also borderline obese.

In spite of the health risk factors associated with his lifestyle choices, Bond did not suffer from any liver disease or lung disorder. In June of 2005, physician progress notes show that he was being treated for PTSD; depression; upper back, shoulder, and neck pain; hypertension; elevated cholesterol; and severe gastroesophageal reflux disease ("GERD"). See id. at 264. Additionally, the 2005 progress notes from his primary care physician show that Bond did not report symptoms of a serious cardiac ailment before his September admission to the VAMC. Exhibit P1 at 246-277. When Bond visited the VAMC emergency room for symptoms related to his GERD on July 16, 2005, an electrocardiogram ("EKG"), which measures the electrical activity of the heart during its contractions, showed normal cardiac activity. Id. at 250, 550.

It is undisputed that when Bond arrived at the VAMC emergency room on September 22nd, he was suffering from acute coronary syndrome ("ASC") and unstable angina as evidenced by his symptoms of severe substernal chest pain (reported 10+ on a scale of 1 to 10), shortness of breath, sweating, and nausea. See Exhibit P1 at 212, 217, 238, 517. When

questioned later during his admission about his history of chest pain, Bond reported for the first time that he had been experiencing episodes of pain lasting 45 minutes to 5 hours almost daily for the past two months; that the pain radiated to his shoulders; that it occurred at rest and with exertion; that it was occasionally associated with nausea; and that two days before he had experienced his most severe episode, which lasted close to 20 hours and was accompanied by vomiting and sweating. Id. at 209.

Each of the seven EKGs taken during Bond's VAMC admission showed abnormal readings indicative of ischemia, which means that Bond's heart muscle was suffering from a lack of oxygenated blood; there was also evidence of an older myocardial infarction ("MI") that occurred sometime after the July EKG. See id. at 543-547 (EKG test strips). Further testing revealed that Bond had 1313 pg/ml of brain natriuretic peptide ("BNP") present in his blood, which is abnormally high given that the level should have been less than 126 pg/ml. Id. at 203. All of the cardiology experts agreed that such a high BNP reading indicated that Bond's heart muscle suffered some form of stress. However, Bond's levels of Troponin, a cardiac enzyme that is present when cell damage or death occurs and is an indicator of a recent MI, were negligible--less than 0.01 ug/L--in a series of three tests. See id. at 189-191. Finally, an echocardiogram was performed to determine Bond's ejection fraction in the left ventricle. The ejection fraction measures the contractions of the heart, and is expressed as a percentage of blood that is pushed out with each heartbeat; Bond had a reading of 56 percent, which falls within the normal range. See Exhibit P1 at 189, 509.

It is undisputed that during the first 24 hours or so following Bond's admission, the VAMC physicians appropriately treated his cardiac condition with aspirin, beta blockers, and

ACE inhibitors, as well as intravenous nitrates, heparin, and Tirofiban. It also is undisputed that the decision to perform a cardiac catheterization and angiogram to view the condition of Bond's coronary arteries was appropriate, and that the diagnosis that Bond was suffering from coronary artery disease ("CAD") was correct. Notes in Bond's medical records show that his chest pain and other symptoms of cardiac distress disappeared during his stay at the VAMC, and the monitoring equipment that he was connected to throughout his admission did not register any acute arrhythmias. See id. at 172, 176, 183, 189. On September 23rd, Bond was up and walking around without experiencing further chest pain or shortness of breath, and he reported that he was feeling well and wanted to go home. Id. at 183, 203. A few hours before he was discharged on September 24th, Bond reported that he felt "great," and had "no chest pain since admission." Id. at 176.

What remains disputed and therefore must be resolved by the court, as the trier of fact, are the following issues:

1. Whether the VAMC doctors mis-read Bond's angiogram when they concluded that he had 40 percent stenosis (narrowing) in the proximal section of the left anterior descending ("LAD") coronary artery;
2. If the VAMC doctors did mis-read the angiogram, whether the stenosis was 80 percent as plaintiff contends, and as noted in Bond's autopsy report, or whether the stenosis was some other percentage;
3. Based on my determination of the percentage of stenosis present in Bond's proximal LAD, as well as the presence of stenosed areas in the LAD and other coronary vessels, whether the standard of care required an invasive procedure such as angioplasty, stent

placement, or bypass surgery before Bond was discharged from the VAMC to prevent death from an acute cardiac event such as an arrhythmia or infarction;

4. Whether VAMC doctors committed medical malpractice in failing to perform a final EKG, as ordered, before Bond was discharged; and
5. Whether VAMC doctors' failure to perform an exercise tolerance test ("ETT") before Bond was discharged constituted medical malpractice.

The above medical issues were the subject of extensive and conflicting expert testimony throughout the four-day trial. Based on my review of the testimony, my credibility determinations, and my review of the conflicting medical literature offered by the parties, I make the findings of fact and conclusions of law set forth below.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

A. The Angiogram Reading, Percentage of Stenosis, and Appropriate Treatment

The primary divergence between plaintiff's and defendant's expert cardiologists revolves around the analysis of the arteries of Bond's heart; in particular, the proximal (upper) segment of the LAD. According to plaintiff's expert witness, Dr. Jay Schapira, the LAD is one of three arteries running downward from the mouth of the aorta at the top of the heart and is functionally important because it supplies the largest territory of heart muscle. Therefore, any blockage or narrowing that impedes the flow of blood through the LAD, especially if it occurs near the origin of the vessel as it did in Bond's case, is considered serious because a large portion of the heart muscle could suffer damage.

Dr. Schapira claimed that a visual inspection of Bond's proximal LAD showed a tight lesion, with 70 to 80 percent stenosis, that he labeled "the widow maker." He also identified

areas of stenosis further down the LAD, as well as in two other coronary arteries, and opined that Bond should have been treated surgically before he was discharged from the VAMC, preferably with at least four bypasses. Just before trial, with no notice to the court or opposing counsel, Dr. Schapira performed a quantitative analysis using calipers and micrometer to confirm his visual estimation of 80 percent stenosis based on a single frame of the digital angiogram "film." See Exhibits P58 and P62.

In contrast, two of defendant's treating cardiology experts, Dr. George Giraud and Dr. Eric Stecker, who performed Bond's cardiac catheterization and interpreted the angiogram results on September 23, 2005, concluded, based on their visual examinations, that the same stenosis identified in the proximal LAD was only 40 percent. See Exhibit P1 at 509. Because the plaintiff's calibration was done without notice to the defense, the court requested that the defense experts perform a similar calibration. Dr. Giraud performed the same quantitative analysis on the same frame of film and testified that his measurements confirmed that the lesion had a stenosis of 38 to 39 percent. Defendant's leading expert witness, non-treating cardiologist Dr. John McAnulty, performed quantitative angiography on the same lesion using that frame, but also based his measurements on other camera angles after reviewing both still-frame and motion picture films, and calibrated the stenosis at 48 to 50 percent. See Exhibit D-129.

There is no question in the court's mind that all of the expert witnesses were sincere, highly trained, and with respect to most of the opinions they expressed, each passed the screening required by Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993). Thus, to resolve this schism of expert opinions regarding the percentage of stenosis present in Bond's proximal LAD, and to make a determination as to whether the VAMC doctors mis-read the

degree of stenosis shown in Bond's angiogram films, the court must evaluate the credibility of each expert who gave an opinion about these issues.

Plaintiff's expert witness, Dr. Jay Schapira, a very active board certified cardiologist from California, teaches as an adjunct at UCLA, diagnoses heart disease, and maintains a highly active surgical practice in which a large percentage of patients receive surgical intervention. He describes his practice as invasive cardiology and interventional cardiology; that is, utilizing mechanical devices to open up coronary arteries, including performing angioplasty with balloons and inserting stents. He testified that he personally performs stent procedures, but refers patients who require bypasses to heart surgeons who specialize in that procedure. Dr. Schapira also is a very experienced medical/legal expert witness who charges \$10,000 per day and who has testified at trial more than 100 times in his career; at least 20 times between 2000 and 2005. In 2005, he testified in depositions as many as 42 times, approximately 70 percent of the time for the plaintiff in the litigation. At trial in this case, he testified that only five percent of his practice deals with giving expert testimony in medical/legal litigation where he is not the treating physician. Without doubt, Dr. Schapira is a highly qualified and highly paid non-treating expert. Thus, the court expected him to be extremely careful in presenting his testimony in his Rule 26 report, his pretrial deposition, and during the trial of the case.

To evaluate the weight of Dr. Schapira's opinions, I examined not only his vast credentials, but also any inconsistent or questionable basis for his opinions under Federal Rule of Evidence 702. In his deposition, Dr. Schapira was asked to justify his position with medical articles to support the opinion that a patient with a stenosis such as Bond's should have been given immediate surgical intervention, and that an invasive procedure "would have significantly

reduced the mortality rate of patients like Mr. Bond." See Plaintiff's Response to Defendant's Daubert Motion (#28) at Exhibit A, p. 71. Dr. Schapira testified during his deposition that he thought the BARI trial, the CASS trial, and several other research studies supported his opinion that surgery improves life expectancy in patients like Bond. See id. However, when I read these studies before the trial, they revealed that the researchers concluded the opposite; there is no statistically significant difference in survival rates between surgical intervention versus medical therapy even in patients with 3-vessel CAD, particularly if their left ventricular ("LV") function (determined by measuring ejection fraction) was normal. See Exhibit D120; Appendix B, Exhibit 14. Further, the CASS research involved patients with mild stable angina, who were free of angina after infarction, as opposed to patients such as Mr. Bond, whom plaintiff contends had unstable angina and high risk CAD. Following this observation, I wrote to plaintiff's counsel requesting that Dr. Schapira submit articles to justify his opinion. Plaintiff submitted trial exhibits that included medical treatises and journal articles, see Exhibits P11-P36; however, Dr. Schapira's trial testimony covered only the 2002 ACC/AHA Guideline Update dealing with the classification of risk of death from unstable angina, Exhibit P14, and the significance of BNP in predicting risk of an adverse cardiac event, Exhibits 29, 32-34.

Because it remained unclear whether there was a correlation between surgical intervention and increased chance of survival in patients with the percentage of stenosis observed in Bond's proximal LAD, at the court's request, post-trial on February 13, 2008, plaintiff submitted supplemental articles purporting to support plaintiff's claims. See Appendix A. There is reliable medical evidence in the 2004 ACC/AHA Guideline Update to support Dr. Shapira's contention that bypass surgery generally improves long-term survival in

patients with 3-vessel CAD if there is "significant"--meaning greater than 50% stenosis--and "[t]he more severe the symptoms, the more proximal that LAD CAD, and the worse the LV function, the greater the benefit from surgery." Appendix A, Exhibit C at 3.2.2.2. However, literally turning the page to read a bit further, the same source supports defendant's contention that non-surgical medical treatment was an appropriate choice, as follows: "LV systolic function remains an important predictor of which patients are likely to benefit from surgery. In patients with a normal EF [ejection fraction], surgical revascularization generally provides little survival benefit." Id. at 3.2.2.4. Bond's echocardiogram shows that his ejection fraction was normal. Dr. Schapira's failure to fully inform the court of the significance of all of the data acquired during Bond's admission to the VAMC does little to bolster his credibility.

Another problem with Dr. Schapira's testimony is that he bases his conclusion that Bond's proximal LAD stenosis was 80 percent on the findings made by the VA pathologist, and he now claims his earlier estimate at 70 percent in his Rule 26 report to the court was a typographical error. Defendant contended that a physician cannot necessarily rely on measurements found at autopsy as an indicator of the percentage of stenosis present while the patient is alive with his heart still beating, and drew the analogy that postmortem measurements are akin to measuring the diameter of a bicycle tire after it has gone flat--which is what happens to arteries after death--versus measuring a fully inflated tire. Defendant's expert, Dr. John McNulty, emphasized this discrepancy at trial when he testified as follows:

[T]here's a well-recognized discrepancy between findings from an angiogram and findings from an autopsy.

Even if it's understood that the same region of the blood vessel is looked at, the situation is different enough that measurements very rarely match between the two techniques, and overwhelmingly it's

observed that autopsy measurements result in greater narrowing than angiogram measurements.

* * *

[T]here are probably a number of explanations, but I think the concept of measuring a tube that's collapsed, versus one that's held open by pressure is probably one of the major differences in the measurements when a person has died, and when a person is being studied with an angiogram.

Transcript of McAnulty Testimony, February 7, 2008, ("McAnulty Tr.") at 49-50.

In addition, Dr. McAnulty pointed out that the autopsy report did not specify whether the pathologist took samples from the proximal region of Bond's LAD coronary artery as described in the angiogram, or from a region further down the vessel where there were narrowings that may have been 80 percent.

The VAMC pathologist testified that she did not recall and had not specified in her report precisely which region of Bond's LAD she obtained the samples that she analyzed, only that it was her common practice to take them from the narrowest part of the vessel. In addition, the pathologist was not qualified to make a before death and after death analysis regarding the degree of stenosis observed in Bond's proximal LAD, and Dr. Schapira never clarified how that difference could justify his assumption. He simply adopted the autopsy report of 80 percent or greater stenosis by referring to "the Glagov phenomenon," a study he claims all pathologists would know. However, the VAMC pathologist testified that she did not account for the Glagov phenomenon when she calculated the percentages of coronary artery stenoses listed in her report.

Plaintiff did not supply the court with a reference to Glagov's research study; however, post-trial defendant submitted three supplemental articles that discuss "Glagov's phenomenon." Appendix B, Exhibits 10-12. In 1987, Glagov and his fellow researchers published their

conclusion that "human coronary arteries enlarge in relation to plaque area and that functional important lumen stenosis may be delayed until the lesion occupies 40 percent of the internal elastic laminal area." Appendix B, Exhibit 10. After the stenosis exceeds 40 percent, "lumen diameter decreased, resulting in a restriction in flow . . . [w]hen this [Glagov] phenomenon fails to occur the result is stenosis." Appendix B, Exhibit 12 at 4, 10; see also Exhibit 11 at 518, Fig. 1. None of the articles explain how the Glagov phenomenon would be relevant to support a finding that Bond's proximal LAD stenosis was 80 percent or greater at the time his angiogram was performed.

Regarding the reliability of the testimony provided by Dr. George Giraud, a VAMC cardiologist who teaches at that hospital as well as the Oregon Health Sciences University ("OHSU"), and who is a specialist who directs the VAMC cardiac catheterization lab; and that of Dr. Eric Stecker, a cardiologist and electrophysiologist, now practicing at the Legacy Good Samaritan Hospital here in Portland, I find both of these experts to be very credible. There is no question that these doctors are dedicated professionals who took great care to review Bond's relevant medical history and to perform the cardiac catheterization procedure properly. Both testified that they took multiple motion picture angiogram views of Bond's coronary arteries quickly and efficiently using the VAMC's state-of-the-art dual-camera system to adjust the camera angle to obtain unobstructed views of the LAD along the entire length of the vessel. Doctors Giraud and Stecker testified that they spent more than an hour conducting a visual examination of Bond's angiogram film clips on September 23rd; however, it was not standard practice to perform a quantitative analysis on a single frame of film to confirm their visual reading that the lesion in Bond's proximal LAD was 40 percent stenosed.

When asked by the court to re-examine Exhibit P58, which plaintiff submitted as the prime exhibit of the "widow maker" stenosis, Dr. Giraud spent hours analyzing Bond's angiogram and testified that, due to the camera angle, the single frame plaintiff relied upon at trial gave a false impression of the severity of the stenosis in Bond's proximal LAD artery because there were overlapping segments on either side of the lesion. Calibrating the thinnest section on Exhibit P58 and comparing other camera angles of the same artery, which more faithfully represented in three dimensions the severity of the stenosis, Dr. Giraud testified that his quantitative analysis confirmed that the disputed stenosis was 38 to 40 percent. However, because they were Bond's treating doctors, and their angiogram interpretations are directly at issue in this case, the court recognizes the potential bias inherent in the testimony given by doctors Giraud and Stecker

Defendant's non-treating expert, Dr. McAnulty, provided the final analysis of the "widow maker" stenosis. Dr. McAnulty, one of the leading cardiologists in this community, is also a clinical researcher in the field of cardiac sudden death, and currently serves as the medical director of arrhythmia services at Legacy Good Samaritan Hospital. In the past, he has served as the head of the division of cardiology at OHSU, director of the OHSU cardiac catheterization lab, director of the OHSU arrhythmia service, and head of the OHSU cardiology division; he also used to hold an appointment to work at the VAMC, but no longer has any formal affiliation with that institution. I have commented on the potential bias of plaintiff's medical expert witness. By like token, I am fully aware that doctors do not like to testify against fellow doctors or condemn the institution with which they are or have been affiliated. In this case, I recognize that Dr. McAnulty was once closely allied with the Veterans Hospital and would be most

reluctant to condemn or criticize the procedures of the very persons with whom he taught, practiced medicine, and in some cases continues to work alongside. In particular Dr. Stecker, who performed Bond's angiogram, was once Dr. McAnulty's student, and is now associated with Dr. McAnulty at Good Samaritan Hospital and obtained his position at McAnulty's request. Thus, I closely scrutinized Dr. McAnulty's testimony for any temptation to simply back up the actions of his present and former colleagues, rather than give an independent analysis. I find that any such potential bias did not alter the reliability of his testimony.

Dr. McAnulty testified unequivocally that in 2005, as it is today, the standard of care for cardiologists reading an angiogram in the Portland metro area was to do a visual inspection using motion picture angiogram films, and evaluate the vessels in multiple views. Based on an initial visual assessment of the lesion in Bond's proximal LAD, Dr. McAnulty concluded that the stenosis was 40 percent, and further testified that he does not routinely quantify a stenosis by comparing the diameter of the narrowing relative to the vessel before and after, as Dr. Shapira did in this case. Dr. McAnulty concurred with Dr. Giraud's reasons for objecting to using a single frame of angiogram film as the basis for interpreting the degree of stenosis in Bond's proximal LAD, testifying that he "could not do it from frame 22 alone, because the overlap of vessels just makes it impossible to have a reference vessel to compare the stenosis." McAnulty Tr. at 10. Without knowing precisely what Dr. Giraud's measurements were, Dr. McAnulty engaged in the same quantitative analysis as the other experts but utilized additional views where there was no overlap to better quantify the degree of stenosis, and concluded that it was 48 to 50 percent. See Exhibit D129.

In the final analysis, to resolve the issues of whether the VAMC doctors mis-read Bond's

angiogram, and what percentage of stenosis was present in Bond's proximal LAD coronary artery, the court must choose the most credible of three sets of witnesses. I find that Dr. McNulty is the least biased, the most credible, and has provided the most well-reasoned and thorough analysis of Bond's coronary anatomy. He carefully evaluated and personally marked articles that justify his position and ultimate conclusions. Also, having taught or supervised about a third of Oregon's 200 practicing cardiologists, he is in a unique position to base his testimony on his extensive knowledge of the degree of care, skill, and diligence used by ordinarily careful cardiologists in the Portland metro area. Careful doctors who viewed all of Bond's angiogram films could not determine the amount of stenosis with exactness. All experts agreed reading angiograms is a most difficult task and that reasonable minds could and did differ. Accordingly, I conclude that the VAMC doctors did not mis-read Bond's angiogram, and that the catheterization report issued by doctors Giraud and Stecker met the legal standard of care. Furthermore, I find based on the evidence presented at trial that the stenosis in Bond's proximal LAD did not exceed 50 percent.

Given that determination, it is less difficult to find that an invasive procedure such as stent placement or bypass was not warranted under the circumstances presented in this case. Dr. Schapira argued that based on the 2002 ACC/AHA practice Guidelines, Bond was in the "high-risk" category for short-term risk of death, see Exhibits P14 and P57, and that an invasive procedure such as bypass surgery could be justified under the legal standard of care. Nevertheless, viewing Bond's medical record as a whole and given that the extensive medical literature showing no statistically significant difference in mortality between medical management and an invasive procedure, the course of treatment chosen by the VAMC doctors

for this veteran was also easily justifiable. The preamble to the ACC/AHA Guidelines themselves say it best: "These practice guidelines are intended to assist physicians in clinical decision making by describing a range of generally acceptable approaches for the diagnosis, management, or prevention of specific diseases or conditions. . . . The ultimate judgment regarding the care of a particular patient must be made by the physician and patient in light of all of the available information and the circumstances presented by that patient." Exhibit P14 at 3.

A review of Bond's symptoms showed, without a doubt, that he was in acute coronary distress when he arrived at the VAMC, as his seven abnormal EKGs confirmed. His angiogram revealed a number of significant stenoses in three different coronary arteries, and he was diagnosed--for the first time--with diffuse CAD. When questioned about his history of chest pain he revealed--for the first time--that he had been suffering symptoms for two months that were indicative of coronary ischemia and unstable angina. Although of questionable relevance at the time, Bond's BNP level was at least ten times higher than normal, and gives some indication that he was suffering from severe ischemia.

In contrast, Bond's Troponin levels were undetectable, meaning that he had not had an MI within the past six days. His echocardiogram showed a normal ejection fraction. He responded well to the medications he received, his cardiac condition stabilized, and his symptoms of cardiac distress disappeared. He did not have further arrhythmias or show other signs of ischemia even after the intravenous medications were stopped. Doctors who examined him found that did not have a heart murmur, and he was not suffering from pulmonary edema because his lungs were clear--"no rales, ronchi or wheezes." See Exhibit P1 at 211. At discharge, he reported that he felt great and was walking around without suffering any symptoms

of cardiac distress.

The 2006 ACC/AHA research study that correlated BNP and Troponin levels to predict "mortality benefit from coronary revascularization in acute coronary syndromes" elegantly and succinctly demonstrates why the judgment call that Bond's treating doctors had to make between medical management and a more invasive treatment such as revascularization was a difficult one--a patient such as Bond who had a Troponin level of less than 0.01 ug/L, but also a BNP higher than 237 ng/L, is literally right on the line between "lower mortality with revascularization" and "higher mortality with revascularization." Exhibit P34, at 1152, Fig. 5. Dr. Schapira referred to the figure in this study solely to support his testimony that the test for BNP was useful to stratify patients into risk categories, and that Bond was at high risk for an adverse cardiac event based on his BNP level of 1313 pg/ml. See Transcript of Schapira Testimony, February 5, 2008, ("Schapira Tr.") at 63-65. By contrast, Dr. McAnulty explained that the significance of the research was that based on those two lab tests alone, likelihood of mortality would not have been greater or lesser with revascularization. See McAnulty Tr. at 21-23.

Moreover, the VAMC doctors who treated Bond emphasized in their testimony, as previously noted, that Bond had a normal ejection fraction, and it factored into their decision to manage his CAD medically by putting him on a regimen of drug therapy and conducting follow-up tests to monitor his cardiac condition. See Exhibit P1 at 191. Dr. McAnulty explained the significance of this test, as follows: "When the ejection fraction is normal, in a group of patients like Mr. Bond, it's actually a favorable prognostic marker. . . . In this particular case, it's also one more reason why should he have even had a tight narrowing, of 80 percent, why, the role of

intervention would not have been clear in that when the ejection fraction is normal, even if there is a vessel where there would be agreement about stenting or coronary bypass surgery, the effects of survival on that person, with mechanical intervention, are not clearly any better than medical therapy, alone." McNulty Tr. at 34-35. Dr. Schapira commented that Bond's good ejection fraction made him "at low risk from an arrhythmia that you would call a death due to sudden cardiac death . . . [but] [h]e didn't die of sudden cardiac death . . . which is a particular unexpected death syndrome. He died of ischemia which caused a cardiac arrhythmia." Schapira Tr. at 95.

Although plaintiff's and defendant's cardiology experts agree, as the VAMC pathologist found, that Bond died of a lethal arrhythmia, meaning that the ventricles in his heart either went into fibrillation or he suffered a cardiac standstill, the precise cause of his arrhythmia remains in dispute. Dr. McNulty, who is an expert in treating cardiac arrhythmias, testified that while ischemia from coronary artery narrowing can cause a lethal heart rhythm to occur and is a reasonable explanation, it is not a definitive explanation because the mechanism that triggers lethal arrhythmias is still uncertain. McNulty Tr. at 38-39. Arrhythmias can be caused by myocardial damage from CAD, micro-scarring that promotes the chance of developing a lethal arrhythmia at any time, elevated adrenalin levels, or from a random sudden death rhythm. Id. at 39. The precise cause of Bond's arrhythmia is a scientific dispute that need not be resolved to answer the ultimate question in this case.

I find, based on all of the evidence, and particularly on the well-supported testimony of Dr. McNulty, that even if Bond had undergone an invasive cardiac surgery with four bypasses, as recommended by Dr. Schapira, his life expectancy would not have been extended as

compared to treating him medically.² Bond died of an unforeseen arrhythmia from an unknown cause that would not definitively have been prevented by an invasive surgical procedure.

Therefore, I conclude that the VAMC doctors' decision to pursue a more conservative medical approach, and to treat Bond accordingly with a well-accepted regimen of drug therapy, did not violate the standard of medical care in the community.

B. The Final EKG Order

Even in a nationally recognized, first-rate training hospital such as the Portland VAMC, the volume of medical records generated and the numbers of orders issued can overwhelm the capacity of a managed-care system to deliver every test precisely as ordered. In Bond's case, each doctor or team of doctors handled a discrete aspect of his care, posted the observations and conclusions on a computer network that other care providers could access hospital-wide, and moved on to the next patient. The number of witnesses called to testify on the care Bond received during his relatively brief admission in September of 2005 reminded the court of the adage: "Too many cooks can spoil the broth." One of the doctors-in-training, without a request from a supervisor, ordered an EKG to be performed before Bond's discharge. This order was neither carried out nor rescinded by superiors. However, during his hospitalization Bond had already received seven EKGs, all of which were abnormal and indicated that Bond was suffering from cardiac ischemia. A senior VAMC staff cardiologist testified, and Dr. McAnulty

²Regarding the issue of Bond's life expectancy, I note that Dr. Schapira testified that he simply took 10 years off Bond's normal life expectancy because of Bond's documented use of cigarettes and alcohol. Without citing to any epidemiological study or other research to support it, Dr. Schapira's opinion amounts to nothing more than a non-educated guess plucked out of thin air, and thus fails the Daubert screening. An expert's willingness to gratuitously guess and express an opinion with no scientific basis as to one subject, casts doubt on the reliability of his other opinions.

confirmed, that performing another EKG would have been redundant because Bond was already being treated for ischemia with the optimal medical program, his symptoms of acute cardiac distress had disappeared within the past 24 to 36 hours, his overall condition was stable, and the information provided by another EKG would not have provided additional information to change the diagnosis or treatment, nor would it have affected the timing of the discharge or the ultimate outcome in Bond's case. In other words, the failure to perform another EKG or rescind it was harmless error.

Once again, Dr. Schapira did not hesitate to opine that the defendant's failure to do the final EKG constituted medical malpractice, even though he never explained any basis for his opinion. In like manner, he summarily accused the defendant of wrongfully discharging Bond, without giving any meaningful specifics. I find that both of these opinions lack a sufficient basis to support his conclusion that the defendant violated the standard of care by neglecting to perform another EKG before Bond was discharged.

C. The Exercise Tolerance Test

Plaintiff also complains that defendant's failure to perform some type of ETT while Bond was hospitalized violated the standard of care because the data obtained from evaluating the heart's function with exertion could have resolved the mixed results of the other objective tests, clarified the cause of Bond's pain syndrome, and presumably tipped the balance in favor of life-saving surgical intervention. See Schapira Tr. at 101-102. Dr. Schapira contends that if VAMC doctors were concerned about the potentially adverse complications, such as bleeding, that could occur from having Bond exercise on a treadmill so soon after his catheterization procedure, such complications could have been avoided by performing a pharmacologic stress test while Bond

was still bedridden.

However, Dr. McNulty testified that the standard of care for a patient like Bond who had undergone a cardiac catheterization was to send him home to recover, then bring him back for a follow-up ETT as an outpatient. See McNulty Tr. at 32. He gave two logical and compelling reasons: first, it is difficult for someone who has had a femoral artery punctured and a tube inserted and withdrawn to perform in their usual manner when walking during a treadmill exercise test; second, an ETT would be of greater diagnostic value to test the effectiveness of the medical program after the patient had been on the additional drug therapy for a longer period of time. Id. Regarding the usefulness of a chemical stress test, Dr. McNulty testified that a chemical test does not mimic an exercise test to assess a person's performance on the prescribed course of medical treatment. Id. at 33. Also, a chemical test is used to evaluate CAD; because it was already known that Bond had CAD and that it was affecting the blood flow to his heart based on the EKG results, the data obtained from a chemical test would have been less useful than an exercise test. See id.

Accordingly, plaintiff's complaint lacks merit because the defense proved to the court's satisfaction that a pharmacologic stress test performed on an inpatient basis, although not unusual, is a poor substitute to evaluate the coronary function of an ambulatory patient like Bond, who was capable of returning in a few days for a follow-up outpatient ETT to be performed on a treadmill. Plaintiff made much ado about the fact that the VAMC medical records revealed that six doctors recommended or ordered that Bond undergo an ETT, and yet it was not done before he was discharged. However, I note that there was no time limit specified in the order issued by Bond's treating cardiologist, who wrote "I think the best plan is to treat

him for ischemia with ASA and beta blocker and then bring him back for an ETT to see if there is objective evidence of ischemia with exertion on medications." Exhibit P1 at 191. In fact, several VAMC staff physicians testified that they anticipated that the stress test would best be completed as an outpatient approximately two weeks after discharge. Unfortunately, Bond's time ran out. Nevertheless, I find that defendant did not violate the standard of care when it discharged Bond without first performing an ETT.

CONCLUSION

In sum, evaluating this exceptionally well-trying case by extremely competent counsel and confronted with outstanding witnesses, I conclude that plaintiff simply has not proven by a preponderance of the evidence that the medical treatment the doctors at the VAMC provided to Craig Bond in September of 2005 in any way violated the standards of medical care as practiced in this community; therefore, defendant is not liable under the FTCA for his death. Because the issue of liability is dispositive, I need not reach the issue of damages.³

In closing, I note that this extremely sensitive case involved two casualties of a long-ago war--Bond, who became a victim of substance abuse early on, presumably because of his combat experience; and his loving, supportive wife who did her best to cope with his disabilities. Yet,

³One of the issues that continues to trouble the court is that the defense stipulated that Bond had a life expectancy of 15 years, yet took the inconsistent position that Bond had an unknown life expectancy considering his lifestyle choices and the condition of his heart, and that he suffered sudden cardiac death unrelated to any treatment (or lack of treatment) he received at the VAMC. Apparently, defense counsel entered into the stipulation simply to save the economists' time, so that if the court reached the damages issue, the court could assume that Bond would have lived 15 more years. The economic losses could then be based on the disability payments received and services provided by a stay-at-home spouse doing domestic care for a specific period of time.

sympathy for the litigants can play no role in the court's factual findings and conclusions of law.

Judgment is for the defendant.

DATED this 10th day of March, 2008.

/s/ Robert E. Jones

ROBERT E. JONES

U.S. District Judge

APPENDIX A

The following medical peer-reviewed literature is attached in support of plaintiff's claims:

- Exhibit A E. Braunwald et al., *ACC/AHA 2002 Guideline Update for the Management of Patients With Unstable Angina and Non-ST-Segment Elevation Myocardial Infarction: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on the Management of Patients with Unstable Angina)*, available at: <http://www.acc.org/clinical/guidelines/unstable/unstable.pdf>.
- Exhibit B J. L. Anderson et al., *ACC/AHA 2007 Guidelines for the Management of Patients With Unstable Angina and Non-ST-Segment Elevation Myocardial Infarction: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines for the Management of Patients with Unstable Angina/Non-ST-Elevation Myocardial Infarction)* 116 CIRCULATION e148 (2007).
- Exhibit C K. A. Eagle et al., *ACC/AHA 2004 Guideline Update for Coronary Artery Bypass Graft Surgery: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Update the 1999 Guidelines for Coronary Artery Bypass Graft Surgery)*, available at: <http://www.acc.org/clinical/guidelines/cabg/cabg.pdf>.
- Exhibit D S. C. Smith, Jr. et al., *ACC/AHA/SCAI 2005 Guideline Update for Percutaneous Coronary Intervention: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (ACC/AHA/SCAI Writing Committee to Update the 2001 Guidelines for Percutaneous Coronary Intervention)*, available at: <http://www.americanheart.org>.
- Exhibit E Robert H. Jones et al., *Long-term Survival Benefits of Coronary Artery Bypass Grafting and Percutaneous Transluminal Angioplasty in Patients with Coronary Artery Disease*, 1996 J. THORACIC AND CARDIOVASCULAR SURGERY 1013.
- Exhibit F Salim Yusef, et al. *Effect of Coronary Artery Bypass Graft Surgery on Survival: Overview of 10-Year Results From Randomized Trials by the Coronary Artery Bypass Graft Surgery Trialists Collaboration*, 344 LANCET 563 (1994).
- Exhibit G Ron T. van Domburg et al. *Sustained Benefit 20 Years After Reperfusion Therapy in Acute Myocardial Infarction*, 46 J. AM. C. CARDIOLOGY 15 (2005).

- Exhibit H Excerpt from: *Indications for Bypass Surgery*, in CECIL MEDICINE, Ch. 74 (23d ed. 2008), available at: <http://www.mdconsult.com/das/book/body/89149112-6/679498731/1492/314.html>.
- Exhibit I Airlie Cameron et al., *Coronary Bypass Surgery with Internal-Thoracic-Artery Grafts—Effects on Survival over a 15-year Period*, 334 N. ENG. J. MEDICINE 216 (1996).
- Exhibit J Excerpt from: F. D. Loop et al., *Influence of Internal-Mammary-Artery Graft on 10-year Survival and Other Cardiac Events*, 314 N. ENG. J. MEDICINE 1 (1986).
- Exhibit K H. Oelert, *Kardiochirurgisches Standy-by und Akuteingriffe nach interventionellen kardiologischen Maßnahmen*, 85 Suppl.6 Z KARDIOL 303 (1996) (Ger.).

APPENDIX B

The following medical peer-reviewed literature is attached in support of defendant's contentions:

- Exhibit 1 Alfred F. Parisi et al., *Medical Compared with Surgical Management of Unstable Angina: 5-Year Mortality and Morbidity in the Veterans Administration Study*, 80 CIRCULATION 1176 (1989).

- Exhibit 2 TIMI IIIB Investigators, *Effects of Tissue Plasminogen Activator and a Comparison of Early Invasive and Conservative Strategies in Unstable Angina and Non-Q-Wave Myocardial Infarction*, 89 CIRCULATION 1545 (1994).

- Exhibit 3 William E. Boden et al., *Outcomes in Patients with Acute Non-Q-Wave Myocardial Infarction Randomly Assigned to an Invasive as Compared with a Conservative Management Strategy*, 338 NEW ENG. J. MEDICINE 1785 (1998).

- Exhibit 4 Peter A. McCullough et al., *A Prospective Randomized Trial of Triage Angiography in Acute Coronary Syndromes Ineligible for Thrombolytic Therapy: Results on the Medicine Versus Angiography in Thrombolytic Exclusion (MATE) Trial*, 32 J. AM. C. CARDIOLOGY 596 (1998).

- Exhibit 5 Lars Wallentin et al., *Invasive Compared with Non-invasive Treatment in Unstable Coronary-Artery Disease: FRISC II Prospective Randomized Multicentre Study*, 354 LANCET 708 (1999).

- Exhibit 6 Christopher P. Cannon et al., *Comparison of Early Invasive and Conservative Strategies in Patients with Unstable Coronary Syndromes Treated with the Glycoprotein IIb/IIIa Inhibitor Tirofiban*, 344 NEW ENG. J. MEDICINE 1879 (2001).

- Exhibit 7 David A. Morrow et al., *Ability of Minor Elevations of Troponins I and T to Predict Benefit From an Early Invasive Strategy in Patients with Unstable Angina and Non-ST Elevation Myocardial Infarction: Results from a Randomized Trial*, 286 AM. MEDICAL ASS'N 2405 (2001).

- Exhibit 8 David A. Morrow et al., *Evaluation of B-Type Natriuretic Peptide for Risk Assessment in Unstable Angina/Non-ST-Elevation Myocardial Infarction*, 41 J. AM. C. CARDIOLOGY 1264 (2003).

- Exhibit 9 Leopoldo S. Piegas et al., *The Organization to Assess Strategies for Ischemic Syndromes (OASIS) Registry in Patients with Unstable Angina*, 84 AM. J. CARDIOLOGY 5A, 7M (1999).

- Exhibit 10 Abstract of: S. Glagov et al., *Compensatory Enlargement of Human Atherosclerotic Coronary Arteries*, 316 NEW ENG. J. MEDICINE 1371 (1987).
- Exhibit 11 R. H. Mohiadin et al., *Glagov Remodeling of the Atherosclerotic Aorta Demonstrated by Cardiovascular Magnetic Resonance: The CORDA Asymptomatic Subject Plaque Assessment Research (CASPAR) Project*, 6 J. CARDIOVASCULAR MAGNETIC RESONANCE 517 (2004).
- Exhibit 12 Vyacheslav A. Korshunov et al., *Vascular Remodeling: Hemodynamic and Biochemical Mechanisms Underlying Glagov's Phenomenon*, 27 ARTERIOSCLEROSIS, THROMBOSIS, AND VASCULAR BIOLOGY 1722 (2007).
- Exhibit 13 Rehan Qayyum et al., *Systematic Review: Routine and Selective Invasive Strategies for the Acute Coronary Syndrome*, 148 ANNALS OF INTERNAL MEDICINE 186 (2008).
- Exhibit 14 Michal B. Mock et al., *Survival of Medically Treated Patients in the Coronary Artery Surgery Study (CASS) Registry*, 66 CIRCULATION 566 (1982).
- Exhibit 15 Whady Hueb et al., *Five-Year Follow-Up of the Medicine, Angioplasty, or Surgery Study (MASS II): A Randomized Controlled Clinical Trial of 3 Therapeutic Strategies for Multivessel Coronary Artery Disease*, 115 CIRCULATION 1802 (2007).
- Exhibit 16 William E. Boden et al., *Optimal Medical Therapy with or without PCI for Stable Coronary Disease*, 356 NEW ENG. J. MEDICINE 1503 (2007).
- Exhibit 17 E. Braunwald et al., *ACC/AHA 2002 Guideline Update for the Management of Patients With Unstable Angina and Non-ST-Segment Elevation Myocardial Infarction: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on the Management of Patients with Unstable Angina)*, available at: <http://www.acc.org/clinical/guidelines/unstable/unstable.pdf>.
- Exhibit 18 S. C. Smith, Jr. et al., *ACC/AHA/SCAI 2005 Guideline Update for Percutaneous Coronary Intervention: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (ACC/AHA/SCAI Writing Committee to Update the 2001 Guidelines for Percutaneous Coronary Intervention)*, available at: <http://www.americanheart.org>.